

REMARKS

Claims 1-25 and 27-44 remain in the present application. Claim 26 is cancelled herein. Claims 23 and 24 are amended herein. Applicants respectfully submit that no new matter has been added as a result of the claim amendments. Applicants respectfully request further examination and reconsideration of the rejections based on the amendments and arguments set forth below.

Claim Rejections – 35 U.S.C. §112

Claims 23 and 24 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claims 23 and 24 are amended herein. Applicants respectfully submit that Claims 23 and 24 comply with the written description requirement of 35 U.S.C. §112, second paragraph, in light of the claim amendments.

Claim Rejections – 35 U.S.C. §102

Claims 28-32 and 35 are rejected under 35 U.S.C. §102(e) as being anticipated by United States Patent Number 6,833,835 to van Vugt (hereafter referred to as “Vugt”). Applicants have reviewed the cited reference and respectfully submit that the embodiments of the present invention as recited in Claims 28-32 and 35 are neither anticipated nor rendered obvious by Vugt for the following reasons.

Applicants respectfully direct the Examiner to independent Claim 28, which recites a method for reading a frame buffer comprising (emphasis added):

receiving an address corresponding to a pixel;
transforming the received address into at least one subpixel address;
reading at least one subpixel from the frame buffer using at least one subpixel address, wherein the frame buffer is a single memory comprising a plurality of pixels, wherein each pixel comprises a plurality of subpixels; and
blending the at least one subpixel to create a pixel value.

Independent Claims 29-32 recite limitations similar to independent Claim 28. Claim 35 depends from independent Claim 32 and recites further limitations to the claimed invention.

Applicants respectfully assert that Vugt fails to teach or suggest the limitation of “transforming the received address into at least one subpixel address” as recited in independent Claim 28. The present application discloses that a received address (e.g., from the CPU) is transformed into at least one subpixel address (page 16, lines 5-6). As such, a subpixel resides in memory (e.g., super frame buffer 302 of Figure 3) (page 14, lines 1-2).

In contrast to the claimed embodiments, Applicants understand Vugt to teach that hi-resolution pixels are not put in memory (col. 4, lines 55-65). As such, since addresses point to locations in memory, Vugt teaches that addresses to high-resolution pixels do not exist. Thus, assuming arguendo that a high-resolution pixel as taught by Vugt is a subpixel as claimed, Vugt fails to teach or suggest a subpixel address as claimed. Consequently, Vugt also fails to teach or suggest transforming a received address to a subpixel address as claimed. Moreover, by explicitly teaching that high-resolution

pixels are not placed in memory and are therefore non-addressable, Vugt effectively teaches away from the claimed embodiments.

Applicants respectfully assert that Vugt fails to teach or suggest the limitation of “reading at least one subpixel from the frame buffer using at least one subpixel address” as recited in independent Claim 28. As discussed above, the present application discloses that subpixels are stored in memory, and are therefore addressable via a subpixel address.

In contrast to the claimed embodiments, Applicants understand Vugt to teach that high-resolution pixels are not placed in memory, and therefore are not addressable. As such, assuming arguendo that a high-resolution pixel as taught by Vugt is a subpixel as claimed, Vugt effectively fails to teach or suggest that at least one subpixel is read from the frame buffer memory using at least one subpixel address as claimed. Moreover, by explicitly teaching that high-resolution pixels are not placed in memory, Vugt effectively teaches away from the claimed embodiments.

For these reasons, Applicants respectfully submit that independent Claim 28 is neither anticipated nor rendered obvious by Vugt, thereby overcoming the 35 U.S.C. §102(e) rejection of record. Since independent Claims 29-32 contain limitations similar to those discussed above with respect to independent Claim 28, independent Claims 29-32 also overcome the 35 U.S.C. §102(e) rejections of record. Since Claim 35 depends from independent Claim 32 and recites further limitations to the claimed invention, dependent Claim 35 also overcomes the 35 U.S.C. §102(e) rejection

of record as it depends from an allowable base claim. Thus, Claims 28-32 and 35 are therefore allowable.

Claim Rejections – 35 U.S.C. §103

Claims 1-4, 9-10, 13, 15-17, 19, 21-22, 24 and 26

Claims 1-4, 9-10, 13, 15-17, 19, 21-22, 24 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of United States Patent Number 6,249,853 to Porterfield (hereafter referred to as “Porterfield”). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 1-4, 9-10, 13, 15-17, 19, 21-22, 24 and 26 are not rendered obvious by Vugt in view of Porterfield for the following reasons.

Applicants respectfully direct the Examiner to independent Claim 1, which recites a method for providing antialiased memory access comprising (emphasis added):

receiving a request to access a memory address; and
determining if the memory address is within a virtual frame
buffer and, if so, performing the following:
 transforming the memory address into at least one
physical address within a frame buffer utilized for antialiasing,
wherein said frame buffer is a single memory for containing data
of a plurality of subpixels corresponding to a pixel of said virtual
frame buffer; and
 accessing data of a subpixel at the at least one physical
address within the frame buffer.

Claim 26 is cancelled herein, and therefore, Applicants respectfully submit that the 35 U.S.C. §103(a) rejection corresponding to Claim 26 is moot.

Independent Claims 9, 15 and 21 recite limitations similar to independent Claim 1. Claims 2-4 depend from independent Claim 1 and recite further limitations to the claimed invention. Claims 10 and 13 depend from

independent Claim 9 and recite further limitations to the claimed invention. Claims 16-17 and 19 depend from independent Claim 15 and recite further limitations to the claimed invention. Claims 22 and 24 depend from independent Claim 21 and recite further limitations to the claimed invention.

Applicants respectfully assert that Vugt fails to teach or suggest the limitations of a “transforming the memory address into at least one physical address within a frame buffer,” “wherein said frame buffer is a single memory for containing data of a plurality of subpixels” and “accessing data of a subpixel at the at least one physical address within the frame buffer” as recited in independent Claim 1. As discussed above with respect to Claim 28, the present application discloses transforming memory addresses into physical addresses within a frame buffer, where the frame buffer memory comprises a plurality of subpixels. As such, data of a subpixel is accessed from the frame buffer via at least one of the corresponding physical addresses.

In contrast to the claimed embodiments and as discussed above, Applicants understand Vugt to teach that high-resolution pixels are not stored in memory, and therefore are non-addressable. Thus, assuming arguendo that a high-resolution pixel as taught by Vugt is a subpixel as claimed, Vugt fails to teach or suggest “transforming the memory address into at least one physical address within a frame buffer,” “wherein said frame buffer is a single memory for containing data of a plurality of subpixels” and “accessing data of a subpixel at the at least one physical address within the frame buffer” as recited in independent Claim 1. Moreover, by teaching that

high-resolution pixels are not stored in memory and therefore are non-addressable, Vugt effectively teaches away from the claimed embodiments.

Applicants respectfully assert that Vugt fails to teach or suggest the limitations of a “transforming the memory address into at least one physical address within a frame buffer,” “wherein said frame buffer is a single memory for containing data of a plurality of subpixels” and “accessing data of a subpixel at the at least one physical address within the frame buffer” as recited in independent Claim 1. As such, Porterfield, either alone or in combination with Vugt, fails to cure the deficiencies of Vugt discussed above with respect to independent Claim 1.

Furthermore, Applicants respectfully submit that the suggestion or motivation to combine Vugt and Porterfield in the claimed fashion has not been shown sufficiently to establish a prima facie case of obviousness, as discussed in MPEP §2143. Applicants respectfully submit that neither Vugt nor Porterfield, either explicitly or inherently, provide a motivation or suggestion to combine the two references in the claimed fashion. Furthermore, the references explicitly teach away from the combination. For example, Vugt teaches that physical pixels are stored in frame buffer memory (e.g., lines 29-31 of col. 3 discussing the preferred embodiment of the invention taught in Vugt), while Porterfield explicitly teaches that “main memory should be used for storing, addressing, and retrieving graphics data... instead of expensive local frame buffer memory” (Abstract). As such, Applicants respectfully submit that one skilled in the art would not be motivated to combine Porterfield with Vugt in the claimed fashion.

For these reasons, Applicants respectfully submit that independent Claim 1 is not rendered obvious by Vugt in view of Porterfield, thereby overcoming the 35 U.S.C. §103(a) rejection of record. Since independent Claims 9, 15 and 21 contain limitations similar to those discussed above with respect to independent Claim 1, independent Claims 9, 15 and 21 also overcome the 35 U.S.C. §103(a) rejections of record. Since dependent Claims 2-4, 10, 13, 16-17, 19, 22 and 24 recite further limitations to the invention claimed in their respective independent Claims, dependent Claims 2-4, 10, 13, 16-17, 19, 22 and 24 are also not rendered obvious by Vugt in view of Porterfield. Thus, Claims 1-4, 9-10, 13, 15-17, 19, 21-22 and 24 are therefore allowable.

Claim 39-42

Claims 39-42 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of United States Patent Number 5,594,854 to Baldwin et al. (hereafter referred to as “Baldwin”). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 39-42 are not rendered obvious by Vugt in view of Baldwin for the following reasons.

Applicants respectfully submit that Vugt fails to teach or suggest the limitations “transforming the received address into at least one subpixel address,” “the subpixel address being an address in a frame buffer,” “wherein said frame buffer is a single memory comprising a plurality of subpixels corresponding to each pixel of said virtual frame buffer,” “wherein said plurality of subpixels comprise nearby physical addresses” and “writing the pixel value as at least two subpixels values into the frame buffer using the

subpixel address” as recited in independent Claim 39 for the reasons discussed above with respect to independent Claims 1, 9, 15, 21 and 28-32.

Applicants respectfully submit that Baldwin, either alone or in combination with Vugt, fails to cure the deficiencies of Vugt discussed above. Consequently, Claim 39 overcomes the 35 U.S.C. §103(a) rejection of record. Since Claims 40-42 recite further limitations to the invention claimed in independent Claim 39, dependent Claims 40-42 also overcome the 35 U.S.C. §103(a) rejection of record. Thus, Claims 39-42 are therefore allowable.

Claims 5-6, 11-12, 18 and 25

Claims 5-6, 11-12, 18 and 25 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of Porterfield, and further in view of United States Patent Number 5,664,162 to Dye (hereafter referred to as “Dye”). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 5-6, 11-12, 18 and 25 are not rendered obvious by Vugt in view of Porterfield and further in view of Dye for the following reasons.

Applicants respectfully submit that Dye, either alone or in combination with Vugt and/or Porterfield, fails to cure the deficiencies of the Vugt/Porterfield combination discussed above with respect to independent Claims 1, 9, 15 and 21. Consequently, since Claims 5-6, 11-12, 18 and 25 recite further limitations to the invention claimed in their respective independent Claims, Claims 5-6, 11-12, 18 and 25 are not rendered obvious by Vugt in view of Porterfield and further in view of Dye. Thus, Claims 5-6,

11-12, 18 and 25 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claims 7-8, 14, 20 and 27

Claims 7-8, 14, 20 and 27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of Porterfield, and further in view of Baldwin. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 7-8, 14, 20 and 27 are not rendered obvious by Vugt in view of Porterfield and further in view of Baldwin for the following reasons.

Applicants respectfully submit that Baldwin, either alone or in combination with Vugt and/or Porterfield, fails to cure the deficiencies of the Vugt/Porterfield combination discussed above with respect to independent Claims 1, 9, 15 and 21. Consequently, since Claims 7-8, 14, 20 and 27 recite further limitations to the invention claimed in their respective independent Claims, Claims 7-8, 14, 20 and 27 are not rendered obvious by Vugt in view of Porterfield and further in view of Baldwin. Thus, Claims 7-8, 14, 20 and 27 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claim 23

Claim 23 is rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of Porterfield, and further in view of United States Patent Number 5,623,692 to Priem et al. (hereafter referred to as "Priem"). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 23 are not

rendered obvious by Vugt in view of Porterfield and further in view of Priem for the following reasons.

Applicants respectfully submit that Priem, either alone or in combination with Vugt and/or Porterfield, fails to cure the deficiencies of the Vugt/Porterfield combination discussed above with respect to independent Claim 21. Consequently, since Claim 23 recites further limitations to the invention claimed in independent Claim 21, Claim 23 is not rendered obvious by Vugt in view of Porterfield and further in view of Priem. Thus, Claim 23 overcomes the 35 U.S.C. §103(a) rejection of record, and is therefore allowable.

Claims 33-34

Claims 33-34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt in view of Porterfield. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 33-34 are not rendered obvious by Vugt in view of Porterfield for the following reasons.

Applicants respectfully submit that Porterfield, either alone or in combination with Vugt, fails to cure the deficiencies of Vugt discussed above with respect to independent Claim 32. Consequently, since Claims 33-34 recite further limitations to the invention claimed in independent Claim 32, Claims 33-34 are not rendered obvious by Vugt in view of Porterfield. Thus, Claims 33-34 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claim 36

Claim 36 is rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt in view of Priem. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 36 are not rendered obvious by Vugt in view of Priem for the following reasons.

Applicants respectfully submit that Priem, either alone or in combination with Vugt, fails to cure the deficiencies of Vugt discussed above with respect to independent Claim 32. Consequently, since Claim 36 recites further limitations to the invention claimed in independent Claim 32, Claim 36 is not rendered obvious by Vugt in view of Priem. Thus, Claim 36 overcomes the 35 U.S.C. §103(a) rejection of record, and is therefore allowable.

Claim 37

Claim 37 is rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of Priem, and further in view of Dye. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 37 are not rendered obvious by Vugt in view of Priem and further in view of Dye for the following reasons.

Applicants respectfully submit that both Priem and Dye, either alone or in combination with Vugt, fail to cure the deficiencies of Vugt discussed above with respect to independent Claim 32. Consequently, since Claim 37 recites further limitations to the invention claimed in independent Claim 32, Claim 37 is not rendered obvious by Vugt in view of Priem and further in

view of Dye. Thus, Claim 37 overcomes the 35 U.S.C. §103(a) rejection of record, and is therefore allowable.

Claim 38

Claim 38 is rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt in view of Baldwin. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 38 are not rendered obvious by Vugt in view of Baldwin for the following reasons.

Applicants respectfully submit that Baldwin, either alone or in combination with Vugt, fails to cure the deficiencies of Vugt discussed above with respect to independent Claim 32. Consequently, since Claim 38 recites further limitations to the invention claimed in independent Claim 32, Claim 38 is not rendered obvious by Vugt in view of Baldwin. Thus, Claim 38 overcomes the 35 U.S.C. §103(a) rejection of record, and is therefore allowable.

Claim 43

Claim 43 is rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of Baldwin, and further in view of Priem. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 43 are not rendered obvious by Vugt in view of Baldwin and further in view of Priem for the following reasons.

Applicants respectfully submit that Priem, either alone or in combination with Vugt and/or Baldwin, fails to cure the deficiencies of the Vugt/Baldwin combination discussed above with respect to independent Claim 39. Consequently, since Claim 43 recites further limitations to the invention claimed in independent Claim 39, Claim 43 is not rendered obvious by Vugt in view of Baldwin and further in view of Priem. Thus, Claim 43 overcomes the 35 U.S.C. §103(a) rejection of record, and is therefore allowable.

Claim 44

Claim 44 is rejected under 35 U.S.C. §103(a) as being unpatentable over Vugt, in view of Baldwin, further in view of Priem, and further in view of Dye. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 44 are not rendered obvious by Vugt in view of Baldwin and further in view of Priem and further in view of Dye for the following reasons.

Applicants respectfully submit that both Priem and Dye, either alone or in combination with Vugt and/or Baldwin, fail to cure the deficiencies of the Vugt/Baldwin combination discussed above with respect to independent Claim 39. Consequently, since Claim 44 recites further limitations to the invention claimed in independent Claim 39, Claim 44 is not rendered obvious by Vugt in view of Baldwin and further in view of Priem and further in view of Dye. Thus, Claim 44 overcomes the 35 U.S.C. §103(a) rejection of record, and is therefore allowable.

CONCLUSION

Applicants respectfully submit that Claims 1-25 and 27-44 are in condition for allowance and Applicant earnestly solicits such action from the Examiner.

The Examiner is urged to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,

WAGNER, MURABITO & HAO, LLP

Dated: 1/30, 2006

BMF

Bryan M. Failing
Registration No. 57,974

Two North Market Street
Third Floor
San Jose, CA 95113
(408) 938-9060